UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

Mr. Jay M. Dietrich
Program Manager - Environmental Assurance
IBM Corporation
Essex Junction, Vermont 05452

Dear Mr. Dietrich:

EPA has reviewed your request for a "determination of equivalent treatment" as authorized by 40 CFR 268.42(b) for high TOC D001 characteristic wastewaters (specifically isopropyl alcohol) for which incineration or recovery was specified as BDAT. Based on the information provided in your letter dated February 9 and the conversations between you and my staff, we have determined that the proposed treatment in an on-site biological treatment system, would provide equivalent treatment to that of the promulgated standard.

It should be noted that compliance with these standards does not relieve the facility from compliance with any other applicable treatment standards associated with this waste. This standard does not replace any other applicable federal, state, or local requirements as specified in the facility's waste analysis plan.

Enclosed you will find our determination on your request. If you need further assistance, please contact Michael Petruska, Chief, Waste Treatment Branch (703)308-8434.

Sincerely yours,

Michael Shapiro, Director
Office of Solid Waste

Enclosure

cc : Jim Thompson, OWPE
Andrew Miniuks, EPA Region 1

RO 14230

NOTE TO: Michael Shapiro

SUBJECT: Request for Signature on a Determination of Equivalent Treatment

Attached you will find the paperwork for a Determination of Equivalent Treatment for IBM Corporation. This determination, which is both site-specific and waste-specific, allows IBM's Essex Junction facility to comply with an alternative to the incineration treatment standards for high TOC D001 characteristic waste. The alternative standard is treatment in an on-site biological treatment system.

OWPE and Region 1 have reviewed this determination and verbally concurred. Because this action is allowing an equivalent method of treatment to be used to achieve BDAT, this is considered a Determination of Equivalent Treatment as authorized by 40 CFR 268.42(b). OGC has indicated that this type of equivalency determination, as opposed to the granting of a treatability variance, does not require notice and comment prior to approval.

James R. Berlow

Attachment

Determination of Equivalent Treatment
40 CFR 268.42(b)
Notification of Acceptance
Notification Number: OSW-DE011-00896

Requesting Facility: International Business Machines Corporation (IBM)
Essex Junction Semiconductor Manufacturing Facility

Facility Address: IBM
Essex Junction, VT 05452

EPA Facility ID #: VTD002084705

Facility Representative: Jay M. Dietrich

Phone: (802) 769-4046

Date of Initial Request: February 1996

Waste Description for Which Replacement Standard is Applicable:

High TOC D001 ignitable liquids consisting of 50 to 100 percent isopropyl alcohol (IPA) and water. IBM utilizes IPA to clean and dry semiconductor wafers during and between manufacturing steps, for cleaning and decontaminating parts, prewetting chemical and deionized water filters, and other cleaning and wetting applications. The waste IPA is presently collected in 10,000 gallon RCRA permitted storage tanks and transported off-site for fuel blending. The facility estimates that over 150,000 gallons of this waste are generated per year.

Basis of Request:

The facility proposes to decharacterize the IPA waste in an onsite Sequencing Batch Reactor (SBR) Biological Treatment System, followed by treatment in an industrial wastewater treatment plant and a surface impoundment, prior to release to the Winooski River. (This proposal has also been submitted as part of a Project XL Proposal but is being dealt with in this notice since the existing rules can be applied in an appropriate manner.) The facility asserts that the proposed treatment will provide substantial treatment (99% DRE) of the IPA, will result in improved nitrification efficiency of the SBR system which will benefit the overall quality of the Winooski River, and will eliminate the risks and impacts of off-site transport and combustion of the IPA wastestream while reducing waste treatment costs by $190,000 per year. The facility submitted a treatability study for the SBR (at pilot scale) conducted by the University of Vermont in December 1993. The study demonstrated a reduction in IPA concentration of more than 99.99% which is equivalent to the minimum required efficiency of treatment by combustion -- although it should be noted that IPA is not a hazardous constituent and so is not required to be destroyed at any particular level of efficiency. IBM also has determined, based on their knowledge of the generating process, that no Appendix VIII or UTS constituents are present in the waste stream.

Previously Applicable Treatment Standard for Which Equivalency is Granted:

Waste Code	Physical Form	40 CFR 268.40 Standard
D001 High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a) - Greater than or equal to 10% total organic carbon.	Nonwastewaters	RORGS; or CMBST

Replacement Treatment Standards
BIODG

Justification for the Equivalent Treatment Standard:

Section 268.42(b) allows EPA to promulgate an alternative treatment standard for those wastes for which the existing treatment standard is a designated method of treatment. Applicants must demonstrate that their alternative treatment method achieves a measure of performance equivalent to that achieved by the designated treatment method.

In this case. the waste in question is a high TOC ignitable waste which must be treated by CMBST (i.e. combustion treatment as set out in Table 1 of 268. 42) or RORGS (recovery of organics, as set out in Table 1 of 268. 42). EPA established these methods as the treatment standard for high TOC ignitable wastes because these wastes are generally not amenable to biological treatment because they are so highly concentrated and typically contain high concentrations of toxic organic hazardous constituents. Thus, treatment of these wastes in biological treatment systems would ordinarily be a type of impermissible dilution. See generally, 55 FR at 22544 (June 1, 1990).

However, these facts do not apply to the waste at issue here. The wastes in this case contain isopropyl alcohol, which is not a hazardous constituent. IBM in fact chose to use 100% pure IPA as a less toxic replacement for previously used solvent mixtures. The waste in question is also amenable to biological treatment and in fact promotes its efficacy. IPA is hydrophilic and will not tend to volatilize from the wastewater mixture. The IPA is introduced into the SBR during an anoxic state when aeration is not being performed on the wastewaters, and aeration is not initiated until the majority of the wastewaters have been introduced into the SBR. The carbon within the IPA is then metabolized by the biological reactions. Consequently, the concerns regarding impermissible dilution which prompted EPA to establish CMBST or RORGS as the method of treatment do not apply here.

It should be noted that Congress recently amended RCRA to provide that certain prohibited characteristic wastes are no longer subject to the Land Disposal Restriction requirements if they are decharacterized by dilution and then treated in wastewater treatment impoundments whose ultimate discharge is regulated by the Clean Water Act. See RCRA section 3004 (g) (7) and (8) and 61 FR at 15661 (April 8, 1996). However, the amendments do not apply to wastes for which EPA has established a method of treatment as the treatment standard. Id. Consequently, since IBM'S application involves a characteristic waste which is subject to a designated method of treatment, the waste remains prohibited from land disposal unless treated to meet a treatment standard established by EPA (notwithstanding that the waste is decharacterized before land disposal). 61 FR at 15661 and Chemical Waste Management v. EPA, 976 F.2d 2, 19 - 24 (D.C. Cir. 1992).

Any emissions from the SBR are expected to be well below the limits set by the Vermont Control of Hazardous Air Contaminants Regulations. the CAA requirements and OSHA. IBM has proposed an air monitoring plan to quantify the amount of air emissions and determine if it poses an unacceptable risk to human health or the environment.

The proposal to treat the IPA waste in the SBR wastewater treatment facility is supported by the Vermont Agency of Natural Resources and EPA Region 1.

In short, EPA is finding that IBM is performing equivalent treatment because 1) unlike most high TOC ignitable wastes, this waste is amenable to and effectively treated by biological treatment; 2) the treatment does not involve impermissible dilution by either mixing or cross-media transfer. since the biological treatment

process is removing the IPA; and 3) this high TOC waste, again unlike most. does not contain high concentrations of Appendix VIII hazardous constituents in any case, so that the concerns that prompted EPA to require combustion to assure destruction of hazardous constituents are not present.

Compliance with these standards does not relieve the facility from compliance with any ocher applicable treatment standards associated with this waste. This standard does not replace any other applicable federal, state, or local requirements as specified in the facility's waste analysis plan.

Authorities and References:

This Determination of Equivalent Treatment is in accordance with 40 CFR 268.42(b) which states: "Any person may submit an application to the Administrator demonstrating that an alternative treatment method can achieve a measure of performance equivalent to that achievable by methods specified in paragraphs (a),(c), and (d) of this section, The applicant must submit information demonstrating that his treatment method is in compliance with federal. state and local requirements and is protective of human health and the environment. On the basis of such information and any other available information, the Administrator may approve the use of the alternative treatment method if he finds that the alternative treatment method provides a measure of performance equivalent to that achieved by methods specified in paragraphs (a), (c), and (d) of this section. Any approval must be stated in writing and may contain such provisions and conditions as the Administrator deems appropriate. The person to whom such approval is issued must comply with all limitations contained in such a determination." This provision was further clarified in the preamble for the Land Disposal Restrictions for Third Third Scheduled Wastes; Final Rule (55 FR 22536 (June 1, 1990)) as follows: "When EPA requires the use of a technology (or technologies), a generator or treater may demonstrate that an alternative treatment method can achieve the equivalent level of performance as that of the specified treatment method [40 CFR 268.42(b)], this demonstration is typically both waste-specific and site-specific and may be based on: (1) The development of a concentration based standard that utilizes a surrogate or indicator compound that guarantees effective treatment of the hazardous constituents; (2) the development of a new analytical method for quantifying the hazardous constituents; and (3) other demonstrations of equivalence for an alternative method of treatment based on a statistical comparison of technologies, including a comparison of specific design and operating parameters."

Attachments:

Effective Date: Date of Signature.

Dated:

Michael Shapiro, Director
Office of Solid Waste

International
Business Machines
Corporation

RO 14230

Essex Junction,
Vermont 05452

802/769-0111

February 9, 1996

USEPA
Mr. Shaun McGarvey
Mail Code 5302W
401 M Street SW
Washington D.C. 20460-0884

Dear Mr. McGarvey:

Attached is the IBM Burlington Project XL proposal which has been accepted by USEPA. I am presently working with Mr. Andy Miniuks of EPA-New England to develop the Final Project Agreement. As part of the agreement, Andy and I have agreed that we need to complete an Equivalency Determination in order to assure that there is a sound legal basis for the implementation of this project. Page 4 of the Project XL proposal identifies a means to reach an Equivalency Determination for this project based on an evaluation of the total environmental impact of the project rather than just the specific destruction efficiency of the treatment process.

Andy requested that I forward a copy of the IBM Project XL proposal to you for an Equivalency Determination review. Section 1: Environmental Results, Section 6: Project Feasibility, and Section 7: Monitoring, Reporting, and Evaluation under the ANALYSIS OF THE XL PILOT PROJECT CRITERIA address technical considerations of the treatment process. Additional detail is provided in the referenced attachments.

Please call me at 802-769-4046 if you require additional information on the project proposal or the treatment process. Under the EPA guidance for project XL, the Final Project Agreement has to be signed within six months of the Project acceptance announcement. I would be most appreciative if the Equivalency Determination could be processed within the next two months so that the Final Project Agreement can be finalized within the required time period.

Thank you for your help on this matter.

Sincerely yours,

Jay M. Dietrich
Program Manager - Env. Assurance

JMDjmd

ATTACHMENT

cc: J. DeVillars (w/o attachment)
A. Miniuks (w/o attachment)